

CLAIMS

1. A computer readable storage medium having stored data representing instructions executable by a computer
5 to control an internal combustion engine of a vehicle, said engine having at least a first and second group of cylinders, with a first emission control device coupled exclusively to said first group of cylinders and a second emission control device coupled to said second group of
10 cylinders, said storage medium comprising:

instructions for determining a requested engine output;

instructions for operating both the first and second group of cylinders near stoichiometry in first region and
15 adjusting at least airflow to provide said requested engine output; and

instructions for operating said first group near stoichiometry and second group without injected fuel in second region where said engine output request is lower
20 than in said first region, adjusting at least airflow to said first group to provide said requested engine output.

2. The medium of claim 1 further comprising instructions for adjusting position of an electronically
25 controlled throttle plate to control engine airflow.

3. The medium of claim 1 further comprising instructions for adjusting fuel injected into said first group based on a first exhaust gas oxygen sensor coupled
30 exclusively to said first group.

4. The medium of claim 1 wherein said requested engine output is a requested engine torque.

5. The medium of claim 4 further comprising instructions for determining said requested engine torque based on driver pedal actuation.

5 6. The medium of claim 5 further comprising instructions for operating both said first and second group without injected fuel in a third region where said engine output request is lower than in said second region.

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 7. The medium of claim 6 wherein said second emission control device is coupled exclusively to said second cylinder group.

15 8. A system for an internal combustion engine of a vehicle, said engine having at least a first and second group of cylinders, said system comprising:

 a first emission control device coupled exclusively to said first group of cylinders;

20 a second emission control device coupled to said second group of cylinders;

 a controller for operating in a first mode with both cylinder groups combusting air and injected fuel, with engine output of said first and second cylinder group controlled to a desired output by adjusting airflow to both said first and second cylinder groups; and operating in a second mode with said first cylinder group combusting air and injected fuel and said second cylinder group pumping air without injected fuel, with engine output of said first cylinder group controlled to said desired output by adjusting airflow to said first cylinder group, where said second mode includes operation in a region where an air amount that would be required if

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both cylinder groups were combusting would be less than an engine misfire air limit.

9. The system of claim 8 wherein said second
5 emission control device is coupled exclusively to said second group of cylinders.

10. The system of claim 9 wherein said first and second cylinder group are a first and second bank of an
10 engine.

11. The system of claim 9 further comprising an underbody emission control device coupled downstream of both said first and second emission control devices.
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12. The system of claim 9 further comprising an electronically controlled throttle plate.

13. The system of claim 12 wherein said controller
20 further adjusts position of said electronically controlled throttle plate to control engine airflow.

14. The system of claim 13 wherein said controller further adjusts fuel injected into said first group based
25 on a first exhaust gas oxygen sensor coupled exclusively to said first group.

15. The system of claim 9 wherein said desired output is a requested engine torque.
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16. The system of claim 15 wherein said controller further determines said requested engine torque based on driver pedal actuation.

17. A system for an internal combustion engine of a vehicle, said engine having at least a first and second group of cylinders, said system comprising:

5 a first emission control device coupled exclusively to said first group of cylinders;

a second emission control device coupled exclusively to said second group of cylinders;

a third emission control device coupled downstream of said first emission control device;

10 a fourth emission control device coupled downstream of said second emission control device;

an electronically controlled throttle coupled to said first and second cylinder groups; and

a controller for operating in a first mode with both
15 cylinder groups combusting air and injected fuel, with engine output of said first and second cylinder group controlled to a desired output by adjusting airflow to both said first and second cylinder groups; operating in a second mode with said first cylinder group combusting
20 air and injected fuel and said second cylinder group pumping air without injected fuel, with engine output of said first cylinder group controlled to said desired output by adjusting airflow to said first cylinder group, where said second mode includes operation in a region
25 where an air amount that would be required if both cylinder groups were combusting would be less than an engine misfire air limit; and controlling position of said electronically controlled throttle plate to control engine airflow.

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18. The system of claim 17 wherein said controller further adjusts fuel injected into said first group based on a first exhaust gas oxygen sensor coupled exclusively to said first group.

19. The system of claim 18 wherein said desired output is a requested engine torque.

5 20. The system of claim 19 wherein said controller further determines said requested engine torque based on driver pedal actuation.